

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An exposure apparatus comprising:

a movable body having a reflective surface, and moving with an object to be measured placed on the movable body;

a measuring unit including an interferometer system which irradiates a measurement light beam via a measurement optical system to ~~an object to be measured~~ the reflective surface of the movable body and measures information about position of the object to be measured;

a holding member which holds at least the measurement optical system of the interferometer system; and

a temperature adjusting unit which adjusts a temperature of the holding member.

2. (Currently Amended) An exposure apparatus according to claim 1, further comprising:

a gas supply unit which supplies gas whose temperature has been adjusted to a space including an optical path of the measurement light beam; and

a control unit which controls at least one of the temperature adjusting unit and the gas supply unit such that a temperature of gas supplied from the gas supply unit and a temperature of the holding member coincide with each other.

3. (Currently Amended) An exposure apparatus according to claim 1, further comprising:

a gas supply unit which supplies gas whose temperature has been adjusted to an optical path of the measurement light beam in a space where the object to be measured is arranged,

wherein the measurement optical system and at least part of the holding member are provided in the space.

4. (Original) An exposure apparatus according to claim 3, wherein using at least one of the temperature adjusting unit and the gas supply unit, a temperature of the gas is made to substantially coincide with a temperature of the at least part of the holding member provided in the space.

5. (Original) An exposure apparatus according to claim 1, wherein the object to be measured is at least one of a mask having a pattern formed thereon and a substrate onto which the pattern is to be transferred.

6. (Currently Amended) An exposure apparatus according to claim 5, wherein the measuring unit includes ~~an interferometer which irradiates the light beam to a stage on which the object to be measured is mounted~~ an alignment sensor which detects a mark on the movable body or the object to be measured, at least part of the alignment sensor being provided on the holding member.

7. (Currently Amended) An exposure apparatus according to ~~claim 6~~ claim 5, further comprising:

a projection optical system which projects the mask pattern onto the substrate, wherein the measuring unit includes a focus sensor which detects information about the position of the object to be measured in a direction parallel to an optical axis of the projection optical system, at least part of the focus sensor being provided on the holding member.

8. (Currently Amended) An exposure apparatus according to claim 5, claim 7,
further comprising:

~~a projection optical system which projects the mask pattern onto the substrate,~~
wherein the measuring unit includes ~~at least one of an interferometer which~~
~~irradiates the light beam to a stage on which the object to be measured is mounted, a focus~~
~~sensor which detects information about position of the object to be measured in a direction~~
~~parallel to an optical axis of the projection optical system, and an alignment sensor which~~
~~detects a mark on the stage movable body or the object to be measured, at least part of the~~
~~alignment sensor being provided on the holding member.~~

9. (Original) An exposure apparatus according to claim 8, further comprising:
a frame on which the projection optical system is mounted,
wherein the holding member is fixed to the frame.

10. (Original) An exposure apparatus according to claim 5, wherein the
temperature adjusting unit comprises a heat exchange member fixed to the holding member
and a circulation unit which circulates fluid whose temperature has been adjusted in the heat
exchange member.

11. (Currently Amended) An exposure apparatus provided with a projection
optical system which projects illumination light irradiating an image of a first object onto a
second object, the exposure apparatus comprising:

~~a frame to on which the projection optical system is fixed placed;~~
~~a movable body having a reflective surface, and moving with an object to be~~
~~measured placed on the movable body;~~
~~a measuring unit of which at least part is provided on the frame, including an~~
~~interferometer system which irradiates a measurement beam via a measurement optical system~~
~~to an object to be measured the reflective surface of the movable body and measures~~

information about position thereof, at least the measurement optical system being provided on the frame; and

a temperature adjusting unit which adjusts a temperature of the at least one of part of the measuring unit measurement optical system of the interferometer system provided on the frame and a holding member holding the part.

12. (Original) An exposure apparatus according to claim 11, further comprising:

a gas supply unit which supplies gas whose temperature has been adjusted to a space including an optical path of the measurement beam,

wherein the part of the measuring unit provided on the frame is held by the holding member in the space, and wherein a temperature of the gas and a temperature of the part of the measuring unit provided on the frame and the holding member holding the part are made to substantially coincide with each other by at least one of the temperature adjusting unit and the gas supply unit.

13. (Currently Amended) An exposure apparatus according to claim 12, wherein

the object to be measured is at least one of the first and second objects, and wherein the measuring unit includes at least one of an interferometer which irradiates the measurement beam to a stage on which the object to be measured is mounted, a focus sensor which detects information about the position of the object to be measured in a direction parallel to an optical axis of the projection optical system, and an alignment sensor which detects a mark on the stage movable body or the object to be measured, and wherein at least part of the at least one of the focus sensor and the alignment sensor is provided on the frame.

14. (Currently Amended) An exposure apparatus according to claim 13, wherein

the measuring unit includes at least the interferometer, and the interferometer system detects position information of the stage movable body in a plane orthogonal to the optical axis of the

projection optical system and a relative positional relationship in a direction parallel to the optical axis between the projection optical system and the stage movable body.

15. (Currently Amended) An exposure apparatus which transfers a pattern of a first object onto a second object, the apparatus comprising:

a movable body having a reflective surface, and moving with an object to be measured placed on the movable body;

a measuring unit including an interferometer system which irradiates a measurement beam via a measurement optical system to the reflective surface of the movable body and measures information about position of an the object to be measured;

a gas supply unit which supplies gas whose temperature has been adjusted to a space including an optical path of the measurement beam;

a holding member which holds at least part of the measuring unit measurement optical system of the interferometer system in the space; and

a temperature adjusting unit which makes a temperature of the gas and a temperature of at least one of the measurement optical system of the interferometer system and the holding member and the at least part of the measuring unit substantially coincide with each other in the space.

16. (Currently Amended) An exposure apparatus according to claim 15, wherein the object to be measured is at least one of the first and second objects, and wherein the measuring unit includes an interferometer which irradiates the measurement beam to a stage on which one of the object to be measured is mounted.

17. (Currently Amended) An exposure apparatus according to claim 16, wherein the holding member is fixed to a frame provided separately from a base member on which the stage movable body is arranged.

18. (Currently Amended) An exposure apparatus according to claim 16, further

comprising:

a projection optical system which projects a pattern of the first object onto the second object,

wherein the interferometer system detects information about a the position of the stage movable body in a plane orthogonal to an optical axis of the projection optical system and a relative positional relationship in a direction parallel to the optical axis between the projection optical system and the stage movable body.

19. (Currently Amended) An exposure apparatus according to claim 16, further

comprising:

a projection optical system which projects a pattern of the first object onto the second object,

wherein the measuring unit includes at least one of a focus sensor which detects information about the position of the object to be measured in a direction parallel to an optical axis of the projection optical system, and an alignment sensor which detects a mark on the stage movable body or the object to be measured.

20. (Currently Amended) An exposure apparatus according to claim 16, wherein the temperature adjusting unit can adjust both a temperature of the gas and a temperature of at least one of the measurement optical system of the interferometer system and the holding member and the at least part of the measuring unit independently of each other.

21. (Currently Amended) An exposure method for exposing a second object by

illumination light via a first object having a pattern, comprising the steps of:

suppling supplying gas whose temperature has been adjusted to a space including an optical path of a measurement beam used to measure position information of the

second object irradiated to a reflective surface of a movable body on which the second object is placed,

making a temperature of at least one of at least part of a measuring unit a measurement optical system of an interferometer system irradiating the measurement beam and a holding member holding the part measurement optical system to substantially coincide with a temperature of the gas,

irradiating the measurement beam to the reflective surface of the movable body via the measurement optical system and measuring the position information of the second object, and

moving controlling movement of the second object movable body based on the measured position information.

22. (Currently Amended) An exposure method according to claim 21, further comprising the steps of:

measuring a temperature of the gas in or near an optical path of the measurement beam, and
adjusting at least one of a temperature of at least part of the measuring unit or the measurement optical system of the interferometer system and the holding member and a temperature of the gas based on the measured temperature.